

CONNOR (L.)

NOTES
ON THE
TREATMENT OF TRACHOMA
BY
JEQUIRITY.

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Notes on the Treatment of Trachoma by Jequirity.*

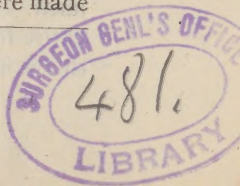
BY LEARTUS CONNOR, A. M., M. D.†

The use of this remedy for diseased eyelids has long been known in Brazil. Thence coming to the notice of De Wecker, of Paris, it has been introduced, in a brief period, to all civilized nations. From De Wecker's first published accounts it was evident that it was an agent of great power. Hence conservative minds were slow to employ it before its powers were more exactly defined. As a definition of these powers is steadily progressing, it is worth while to occasionally stop and so examine the facts and to determine their present status.

Beginning with a very brief account of the results of my own observations, I shall add thereto those of a considerable number of observers scattered over this country and Europe. From these data we shall be able to determine the points upon which all agree and those upon which there still remains more or less doubt. During the past year ten cases have come under my notice in private practice which seemed suitable for the treatment by jequirity. The solutions used were prepared by myself after the plan proposed by DeWecker, viz: a three per cent. solution always used fresh. The applications were made

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but once in twenty-four hours. Since the treatment of the ten cases referred to, I have treated one case with a solution of jequirity in glycerine. This has preserved all its virtues for more than a month and in all respects acts the same as the fresh solution made with cold water.

All the ten cases treated with a watery fresh solution of jequirity were in the dry state of trachoma, and complicated more or less with pannus. In each case the relief was prompt, and far more considerable than I have obtained in similar cases in the same period by old methods. In no instance was there any untoward result. The peculiar jequirity conjunctivitis was obtained with varying degrees of ease in the several eyes. In some cases a single application sufficed, and in others more were required.

I was very careful not to apply jequirity to any eye in which there was any existing purulent or catarrhal conjunctivitis. My reason for this was that I feared the jequirity would simply intensify the existing inflammation rather than produce its own peculiar conjunctivitis, upon which I depended for the relief of the morbid state of the eye. As will be seen by the statement of others, this result has actually followed, and sometimes with very disastrous results. Thus it will appear that I have employed jequirity to cure the results of trachoma rather than trachoma itself. A fair view of the present state of the entire facts available will convince most that this is in truth the proper field for the use of

jequirity. In so far all reports agree that jequirity is a safe and useful remedy. For its use under other circumstances, there still remains a broad field for study. But if we confine its use to this class of cases alone, we have a most important addition to the *materia medica*. Thus it has cured those chronic cases that linger about the eye hospital for an indefinite period of time, so that instead of the wards containing from twenty to fifty cases of old trachoma, they are reduced to a half dozen more or less. We have no doubt that farther study will determine other fields for its usefulness, but for the average practitioner it will be wise to keep within these limits.

Dr. E. Klein (*Centralblatt f. d. Med. etc.*) gives the experiments which he performed to determine the active principle of the jequirity infusion. He prepared jequirity infusion carefully, filtering in such a manner as to avoid all possible contact with the air. Small quantities of the filtrate were introduced by means of a capillary pipette into the conjunctiva bulbi of rabbits, and by the same pipette into test-tubes containing sterilized nutritive fluids. This latter operation was done without permitting atmospheric germs to affect an entrance at the same time. The results in every case were violent jequirity ophthalmia in the rabbits, and absolute freedom from bacilli in the test-tubes, although the latter were kept at a suitable temperature for the growth of the micro-organisms if they had been present. A repetition of this series of experiments pro-

duced the same results. The boiling of a filtered infusion destroyed its power of exciting ophthalmia. Klein regards this as due to a destruction of some sort of ferment rather than the death of the bacilli. On applying to the conjunctiva the bacilli alone no ophthalmia resulted.

From these experiments he concludes that the active principle in jequirity infusions has nothing to do with bacilli.

Neisser (*Centralblatt f. prakt. Augenheil.*) from a careful study reaches the following results:

1. Infusions which are kept free from bacilli remain for long periods as active as fresh infusions containing bacilli. With the formation of bacilli their activity decreases. Warm temperatures appear gradually to destroy their activity even in the absence of bacilli.

2. Inoculations with jequirity-bacilli cultivated in other fluids are without effect.

3. No bacilli are to be found either in the secretions from the inflamed conjunctiva nor in the tissues themselves in jequirity ophthalmia, and no results follow an inoculation with such secretions or tissues.

Salmonson and Holmonfield (*Centralblatt f. prakt. Augenheilk.*, March, 1884,) say that they have found jequirity infusions free from bacilli active in producing ophthalmia. Also in the secretions and tissues of the inflamed eye they found no bacilli under the microscope. Inoculation of eyes with the jequirity bacilli was without effect. They found that

the injection of the jequirity infusion under the skin of frogs killed them in a day or two. The blood of these frogs was found loaded with the jequirity bacilli. But the inoculation of the conjunctiva with this blood was without result. Hence they conclude that the active principle of jequirity is entirely distinct from the bacilli, and is probably a chemically poisonous substance. Farther experiments showed that this substance was insoluble in alcohol, benzoline, and chloroform; it is soluble in glycerine and water. Using twenty-five parts of pure glycerine to one part of the seeds they obtained a solution of great activity, which retained its activity unimpaired for a month.

The *Medical News*, August 9th, 1884, gives an account of some very elaborate researches into the nature of the active principle of jequirity. They were performed by Drs. Warden and Waddell, of the Medical College Hospital, Calcutta. They have detected an active proteid in jequirity which seems to have many properties in common with the venoms of serpents. They call the proteid "abrin," after *abrus precatorius*, the botanical name of jequirity. They give a clear account of their methods, as well as their results, and the means by which the *abrus* roots may be distinguished from those of the true liquorice, which they resemble.

Dr. L. DeWecker (*Archiv. Ophthal.*, March, 1884) gives his views to that date upon the use of jequirity. He lays great emphasis upon the proper preparation of the infusion.

The seeds are first crushed to remove the cortical part. Then they are ground in an ordinary coffee mill. Cold water is then poured upon them, and they are then set aside for three hours. The infusion is then filtered, and is ready for use. It must be prepared daily. He uses a strength of three per cent. This should be applied but once in forty-eight hours. In most cases a single application will produce a violent jequirity ophthalmia. If the cases be not cured, a second application may be made after an interval of a couple of weeks.

The dangers of jequirity ophthalmia are due to two causes: first, the use of too strong solutions; and second, the application to an eye already discharging. The cornea will be endangered by a jequirity application to an eye already discharging, or to one in which there is a beginning ophthalmia. The reason for this is, that under these circumstances the jequirity ophthalmia is not produced at all, but the existing inflammation is greatly intensified to such an extent as to endanger the cornea. The jequirity ophthalmia can only be produced by great difficulty, and by the observance of special precautions.

He says the cases in which the inflammation has spread from one eye to another, or endangered the cornea, have not been cases of jequirity ophthalmia, but of purulent ophthalmia. It follows that the use of the remedy should be restricted to cases in which the granulations are dry or rendered so by treatment. He does not recommend the remedy

except in cases of old dry granulations. He thinks that those who have got bad results have done so because they have applied the remedy to cases unsuitable. He finds no danger from the use of jequirity in parenchymatous keratitis, and chronic infiltration of the cornea; on the contrary, they are cleared up with unusual rapidity.

Mr. Arthur Benson (*Ophthalmic Review*, vol. III., p. 122), from clinical data, concludes: Ophthalmia can be produced by (1) the freshly powdered jequirity seeds; (2) the freshly made infusion; (3) the infusion after bacilli had grown in it; (4) the infusion six weeks old, and swarming with micro-organisms of most varied types; (5) the infusion after these bacilli had ceased motion, and sunk to the bottom of the vessel, apparently dead. He had never seen a typical bacillus during many examinations during all stages of the disease, in the discharges and membranes from eyes affected with the jequirity ophthalmia. The discharges and membranes were entirely devoid of infective qualities. He used the fresh infusion made from the seeds not decorticated, but passed through the coffee mill. He valued highly the use of jequirity in treating granular lids, and never saw any serious result therefrom. In one case there was a short attack of iritis after each application, and in some others infiltration of the cornea occurred.

Galezowski (*Receuil d'Ophthal.*, January, 1884) reports four cases of granular ophthalmia, and from these, with a study of the data

furnished by other observers, he concludes: The facts so far presented show that the so-called cures of granulations consist in a temporary amelioration of the symptoms, and that the disease reappears soon after the cessation of treatment. While some observers report successful cures from the drug, others have either found the drug inefficacious or dangerous, on account of the intense inflammation it excites. In Galezowski's four cases three were attended by a return of the granulations about two months after the application of the remedy. Pannus is favorably influenced by jequirity, but this result is obtained from any irritating substance, and the action of jequirity in this regard is merely temporary.

Dr. W. W. Seely (*Arch. Oph.*, March, 1884,) gives the results of his clinical studies of jequirity in dispensary and private practice. He has never observed any purulence of the jequirity conjunctivitis, simply a swelling of the lids, the formation of a croupous membrane, and a complete disappearance of pannus and granulations. His experience encourages him to continue the use of the drug.

Dr. J. F. Hotz (*Archives Oph.*, March, 1884,) says that his experience has extended over nine months, and includes one hundred cases. He has used two, three and five per cent. solutions made with a one per cent. solution of carbolic acid, or with cold water. The stronger solutions acted quicker, but otherwise as the weaker solutions. The severity

of the inflammation seemed to depend upon the condition of the conjunctiva and the susceptibility of the individual, rather than on the strength of the infusion. An infusion made in fifteen minutes was as effective as one made in twenty-four hours. One application of a two per cent. solution in twenty-four hours was as effective as two or three applications a day. Two or three applications produced the severest reactions. The greatest severity of the ophthalmia was attained in twenty-four hours, and it always appeared so long as there was any adequate tissue in the conjunctiva. He concludes :

1. In fresh trachoma or acute relapses, jequirity aggravated the inflammation.

2. Chronic cases with very succulent conjunctiva and abundant secretion were not benefitted by jequirity.

3. In chronic cases with pale conjunctiva and scanty secretion, the jequirity ophthalmia usually accomplished a speedy absorption of the granulations.

4. Though the cornea became dull and opaque during the acme of the inflammation, it never suffered any permanent injury, even where abrasions or ulcerations existed:

5. Acute vascular keratitis was not benefitted; pannus accompanying trachoma quickly disappeared with the absorption of the granulations. But the most brilliant results were gained in the clearing up of inveterate trachomatous pannus amenable only to inoculation or peritomy.

Dr. W. F. Norris thinks jequirity should be

confined to the most inveterate cases of granular lids where the cornea has long been completely permeated by blood vessels.—*Archiv. Ophthal*, March, 1884.

Dr. C. J. Kipp (*Archiv. Ophthal*, March, 1884,) says that his use of jequirity has been so unsatisfactory that he has discontinued it. His experience makes him think that it is a dangerous remedy.

Dr. E. Gruening (*Archiv. Ophthal*, March, 1884,) reports fully twenty cases. Nine of these had acute or chronic granular conjunctivitis with clear cornea. In these cases jequirity produced the usual effect upon the conjunctiva with ulceration of the clear cornea. The effect upon the granulations varied. In eight eyes the granulations persisted, in two eyes they disappeared, and in the remaining seven eyes they were transformed into ridges and patches and finally into raised cicatricial bands.

Of chronic granular conjunctivitis with pannus, and of zerosis of the conjunctiva with total pannus he records eleven cases, with twenty-one eyes. In these cases such as had associated pannus and granulations the pannus disappeared and the granulations remained. Fourteen corneas became clear and seven remained hazy. In one case there formed a deep ulcer of the cornea, which left a bad scar on healing. In two months the granulations had returned and the pannus. He concludes:

1. The use of a five-per-cent solution of

jequirity is attended with danger to the cornea.

2. The action of a two-per-cent solution, a two-and-a-half, and a five-per-cent upon granulations is inconstant. The granulations are either not affected at all or are changed into dense cicatricial tissue. Their disappearance without conjunctival alteration is rare.

3. Jequirity acts more favorably than any other known substance upon pannus accompanying or following the granular condition of the lids.

Dr. H. Knapp (*Archiv. Ophthal*, March, 1884), reports among other data three cases of acute diphtheria of the conjunctiva, with perforation of the cornea after one application of a fresh three-per-cent solution of jequirity. As the cases were treated in his hospital they had every possible care. He sums up his experience thus :

1. Jequirity cures trachoma more quickly, but less safely than other remedies.

2. Its action is highly beneficial in most cases, but neither uniform nor always controllable.

3. The cure of trachoma by jequirity as well as by nature and other remedies, is accompanied by more or less atrophy of the conjunctiva and formation of cicatricial tissue.

4. The greatest danger from the use of jequirity consists in the occasional development of a severe diphtheritic conjunctivitis followed by pyorrhœa and more or less extensive destruction of the cornea.

5. The use of jequirity ought to be restricted to cases of old and intractable pannus, until cautious experimentation has determined the conditions under which we can obtain the benefit of this powerful remedy divested from its danger.

Dr. L. P. Walker (*Archiv Ophthal.*, March, 1884), reports thirteen cases of chronic granular ophthalmia with pannus, all of which were benefited very much by the use of jequirity infusion. The solution he uses has been good at the end of six months. He has observed no bad effects.

Dr. David Webster (*Archiv. Ophthal.*, March, 1884), reports thirteen cases of chronic granular inflammation of the eyelids in which the jequirity infusion was used with much satisfaction. For such cases he thinks there is no other remedy able to compare with it.

Dr. J. J. Chisolm (*Arch. Ophthal.*, March, 1864), reports an extensive use of jequirity for a year. He finds no uniformity in the susceptibility to its use. In three stout men the use of the jequirity was marked by severe rigor, high fever. In one case there was perforation of the cornea. He restricts its use to cases of trachoma with pannus. For these cases he regards it as the best remedy known.

Dr. Hasket Derby (*Arch. Ophthal.*, March, 1884), reports the use of jequirity in twenty-four persons, in all thirty eyes. Pannus was entirely cleared off in twenty cases, it remained stationary in five, while vision diminished in five cases owing to corneal complications. In all there were seven cases of

corneal complication. He thinks that jequirity is contra indicated in cases having a tendency to ulceration, and in cases with large and florid granulations.

Dr. M. Landesberg (*Jour. Amer. Med. Association*, July 12, 1884), has in the practice of others observed nine cases of granular lids treated by jequirity. Of these in five cases neither the granulations nor the pannus was improved. In two cases deep corneal ulcerations had resulted from the use of jequirity. One patient with xerophthalmus of both eyes lost one eye from the use of jequirity. In another case both eyes got progressively worse.

Dr. Coppez (*Annales D'Oculistique*), has used jequirity in the treatment of one hundred and sixty-four patients. One hundred and forty of these had granulations often complicated with old pannus, and resisted treatment for years. Most of the cases of pannus were cured in a month or two. He succeeded in the treatment of follicular conjunctivitis. In papillary granulations, Coppez found jequirity inferior to nitrate of silver, sulphate of copper and acetate of lead.

M. Menacho, from a study of three hundred cases treated in DeWecker's clinic, concludes: In abscesses and ulcers of the cornea as a general rule as the vascularization develops itself in a uniform manner, slowly and progressively the more favorable is the cure. Especially favorable is the action of jequirity ophthalmia in torpid ulcers of the cornea, tenacious scrofulous pannus, consecutive stages of parenchymatous keratitis, infiltration and sclerosis.

DeWecker in the July *Archiv. Oph.*, discusses Knapp's unfavorable observations, and thinks that there must have been some puru-

lency existing in the cases, else they would not have turned out so badly. But Knapp follows with a detailed account of each case, showing that the cases were exactly such as DeWecker recommends for the use of the jequirity.

Knapp thinks that the unfavorable observations reported, should call for a more extensive study of its nature and action, before it is used in a large variety of cases in the human species. He believes that past experience proves it to be of the greatest value in inveterate pannus, with advanced cicatrization of the conjunctiva.

Dr. Del. Toro (*Lond. Med. Record*), reports that in the treatment of nine cases of trachoma, dacrocystitis occurred in two cases. Simi, in the same journal reports that in the treatment of nine cases of trachoma, he had nine cases of dacrocystitis. Both observers think that the use of jequirity tends to produce dacrocystitis.

Dr. S. Pollack (*Am. Jour. Oph.*, June, 1884,) reports the results of fifty-one cases treated by jequirity. In one case the eye was lost by corneal complications. He is very particular to have his solutions made fresh of three per cent. strength. He concludes that jequirity is the most reliable and prompt remedy for the treatment of trachoma and pannus. The more inveterate the granulations the more efficient and striking the treatment. Pyorrhœa is no essential factor in the treatment, but a sero-purulent discharge is, as also a membrane on the palpebral conjunctiva. A sound bean and fresh infusion are absolutely essential.

Dr. J. A. Andrews (*N. Y. Med. Jour.*, May, 31, 1884,) gives his observations from the treatment of fifty-seven cases. In three

cases there was no result. In seventeen cases there was a partial cure. In the remaining cases the cure was perfect.

Dr. T. R. Pooley, in discussing Dr. Andrew's paper, said that his observations had taught him that jequirity was a dangerous agent, not to be used except in such cases as other methods failed to cure.

These quotations present an aggregate of at least eight hundred cases. It will be observed that the majority of observers admit the great service jequirity has rendered them, in enabling them to more rapidly and pleasantly cure their patients. But few eyes have been lost. Probably the same men in treating the same number of cases from this time onward, would make so much better selection of cases as to avoid all loss. Farther, it will be noticed that the treatment of trachoma, instead of extending over years, is completed in as many months. It is apparent that great caution must be observed in all the details of management of this treatment, in order to render it uniformly safe. That little knowledge and little skill and care has wrought even greater havoc with eyes than appears by our facts, will appear to him who looks at the facts from a wider standpoint. But this will soon rectify itself, and the use of the remedy will finally be established firmly in the *materia medica* of eye affections.

From all this data we think the following conclusions are warranted:

1. The active principle of jequirity is some kind of a ferment or alkaloid. That its activity is not due to bacilli seems established. We may hope to isolate this principle in the near future and so obtain a more uniform preparation.

2. At present the most available solution is made of three per cent. of the powdered sound beans, macerated for several hours in cold water, and then filtered and used fresh. The use of glycerine as a solvent and preservative is not yet established. Nor is it clear that carbolic acid, or bichloride of mercury, or salicylic acid will act as a preservative of the solution.

3. The remedy should be applied but once in twenty-four hours, and only repeated if the desired jequirity ophthalmia is not produced. A new attack of this ophthalmia should not be induced under three weeks from the previous one. We have been able to limit the extent of any application by the frequent use of hot water baths, and a weak solution of bichloride of mercury.

4. The cases proper for its application are chronic trachoma, with pannus, or parenchymatous keratitis, or old corneal opacity from any cause. But even in these cases it must not be employed if there be a suspicion of purulency complicating the disease. In acute cases of trachoma it is contraindicated.

5. It needs to be ranked in the general thought with the process of inoculation, and be used under the same circumstances. If so used it will do good and good only. If otherwise employed it may do much harm, especially in heedless or incompetent hands.

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